Clinical Section

Clinical Pathological Conference, June 12, 1943

Clinical Summary

Mrs. J. S. Age 46

A.—History and Physical Findings

May 4 to May 29. In a city hospital under private doctor. The following is a copy of complete history and findings recorded. Discharged with a diagnosis of "Bronchitis Improved."

Backache—3 months. Pain in substernal region—3 months. Heartburn. Cough—3 weeks.

H.P.I.—

Numerous indefinite symptoms. Backaches are frequent. Chronic cough and wheezing. Heartburn associated with occasional vomiting. Vomitus greenish. Appetite poor. Considerable loss of weight (?).

Marital and Mense:—

L. M. P. April 15. Flow 2 days. 4 children.

Physical—

Head and neck—Eyes react to L. & A. Throat negative. B.P. 146/80. No murmurs.

Lungs—Loud rhonchi throughout both lungs. Asthmatic type of breathing.

Abdomen—N. A. D.

Reflexes—sluggish.

Urine—Alb. trace. Sugar 0. S. G. 1.016.

Chart—

Temp. normal. Pulse 100-120. Resp. 20-40. Nurses' notes showed persistent pain in ant. and post. thoracic regions; usually propped up in bed; frequent cough; treated with sinapisms, phenobarb, inhalations and enema.

Admitted to General Hospital July 7. Gave the following history:

Cough since January. Pain in chest and back since January. Weakness since March. Hoarseness since March.

The cough is described as follows: Paroxysmal or spasmodic, unproductive, often wakes her at night. The pain in chest is: constant, aching, retro-sternal, radiating through to back.

Examination—

Chest: Dullness throughout left side. Bronchial breathing in apex. Few rhonchi throughout.

X-ray: Opacity throughout left lung. Mass protruding from mediastinum on left.

Slight clubbing of fingers. Sputum negative for T.B.

W. R. xxx on two occasions. Temp. from 99 to 103. July 22: Difficulty in swallowing. Cough worse after drinking water.

Aug. 3: Chest—mediastinum to left. A.B. 5½" from mid-line. Bronchial breathing over left upper half back. Signs of fluid at base behind. Aspiration 1 c.c. bloody fluid.

Sept. 1: Haemoptysis oz. ii. Traces of blood for two weeks.

Oct. 5: Loud to and fro murmur in 2nd and 3rd L. interspace. ?thrill.

Dec. 2: Abscess formed in chest wall.

Feb. 18: Died.

Temperature Chart: Ran a septic temperature (99-103) throughout stay in hospital (July to February) except for occasional few day intermissions.

Clinical Comment

The first history is quoted as a horrible example: it is utterly and shamefully inadequate. No effort is made to describe the pain she had and it was evidently very troublesome as judged by the nurses' notes.

"Heart burn" is an expression that should never be used without elaboration. It may mean a great variety of sensations in the minds of different people.

No description whatever is given of the cough. It is not even mentioned whether or not she had expectoration. Though her respirations were 44 on admission no mention is made of dyspnoea.

She had a B.P. of 146/80. A pulse pressure of 66 always demands thorough investigation. There were gross signs in her lungs which were not investigated.

All we can gather from this history is that this patient was quite ill. The historian takes refuge in the expression "numerous indefinite symptoms." The insinuation is that the patient was over-stating her case and that her symptoms were largely non-organic in origin. Even from the meagre information it is obvious that she might have had almost any gross disease of her heart and lungs. Not a single bit of investigation was undertaken to eliminate any of them. To diagnose "Bronchitis" without an X-ray plate is verging on criminal negligence.

The urgent, dry, paroxysmal cough points to some irritation high up in the bronchial tree. Since there was hoarseness it might have come from the larynx (due to tbc., neoplasm, syphilis or paralysis of cord). There should have been a laryngeal examination.

The constant pain in the chest radiating straight through the centre is certainly not cardiac or pleural. It suggests neoplasm or aneurism.

First chest examination suggests infiltration or fluid throughout left lung.

X-ray shows a mass that could be: Neoplasm, Aneurism, or glands (Hodgkins, Lympho-saracoma or Tbc.).

The positive W.R. makes aneurism much more likely.

The difficult swallowing indicates that the mass is pressing on oesophagus. Cough after drinking shows that fluid is spilling over into trachea from partly occluded oesophagus. (This could have been confirmed by X-ray.)

Second chest examination indicates indrawing of left side. Because of short history this must be gross atelectasis—not fibrosis.

Summary

There are all evidences of an expanding lesion causing pressure in the upper mediastinum and left root. These are:

1. Atelectasis of the left lung due to occlusion of left main bronchus.
2. Hoarseness due to pressure on recurrent laryngeal.
3. Dysphagia due to pressure on oesophagus.
4. Systolic and diastolic murmur due to partial occlusion of left pulmonary artery.
5. Pain due to pressure on sternum, ribs and vertebrae (with possible erosion).
6. Temperature due to occlusion of bronchus and consequent sepsis of undrained lung (bronchiectasis, abscess or gangrene).
7. Hemoptysis due to erosion ino bronchus.

All this could be due to a bronchogenic neoplasm or an aneurism. Both of these are relatively rare in women. The positive Wasserman and the X-ray plates swing the scale in favour of aneurism. It is to be deplored that an X-ray had not been taken when she first came under treatment. The aneurism would have been obvious; in later films it was partly obscured by a drowned left lung. —J.D.A.

Autopsy Summary

General Examination—

The body is that of a thin woman 47 years of age.

Pericardial Cavity—

Cavity normal. Heart and coronary arteries normal except for slight widening of aortic commissures. Aorta shows marked luetic aortitis. At the beginning of descending aorta is a saccular aneurism, the rounded mouth of which is 4.5 cm. in diameter. It contains blood clot and bulges forward and has almost completely occluded and eroded the wall of the main left bronchus.

Pleural Cavity—

The left pleura is greatly thickened and obliterated by adhesions. The left lung is collapsed and the two lobes fused together. It contains a large ragged abscess cavity extending into the apex which measures 11x5 cms. The medial portion shows small abscesses, and marked bronchiectasis.

The right pleural cavity is normal. The right lung shows only marked oedema.

Thyroid

Contains a calcified adenoma 2 cm. in diameter.

The *Abdominal* organs appear normal.

Microscopic—

Thoracic aorta—Adventitia shows marked fibrous thickening and there are small infiltrations of chronic inflammatory cells. The muscle is atrophied and the intima is thickened by atheroma.

Wall of the aneurism—The wall is almost completely destroyed and there is a large attached blood clot.

Left pleura—Greatly thickened by collagenous fibrous issue. The underlying lung is largely replaced by fibrous tissue densely infiltrated with plasma cells and lymphocytes. Several foci of acute inflammatory cells are seen. Remaining alveoli show a high cubical epithelial lining. The wall of the cavity shows a similar reaction.

Right lung—Shows emphysema, oedema, and heart failure cells. Two very small tubercle-like lesions are seen.

Summary—

1. Luetic aortitis with aneurism.
2. Occlusion of left main bronchus.
3. Left lung abscesses.
4. Bronchiectasis.

Conclusion

Aortic aneurism compressing the left bronchus with resulting collapse, bronchiectasis and abscess formation.

Comment

During the World War I, a number of young negro U.S.A. soldiers in V.D. hospitals in France for the treatment of primary luetic sores died of influenza. Careful post-mortem examinations revealed small patches of syphilitic aortitis showing characteristic microscopic features. Similar but larger syphilitic aortic patches were seen in others who had a genital scar but no treatment. These lesions of syphilitic aortitis were symptomless.

Judging by the ages of these men and that of patients complaining of symptoms of syphilitic aortitis there must be a long period of 10 to 20 years during which the disease makes silent progress. In other series of carefully studied cases the latent period varied from 5 to 40 years between the initial infection and the onset of symptoms. Reports of average interval varies between 16 and 22 years. The initial stage clinically is already an advanced stage anatomically.

The age incidence of post-mortem cases of syphilitic aortitis shows about one-half between 40 and 50 and one-third between 50 and 60 years, with the average age incidence about 45 in a range of 28 to 65.

The widely used term of cardiovascular syphilis is unfortunate because the disease is primarily a vascular one. Except in cerebral vascular syphilis and rare involvement of the innominate, vascular syphilis is syphilitic aortitis, active in the perivascular lymphatics of the adventitia and media. This is in contrast to atheroma which is an intimal and subintimal disease.

Primary involvement of the aortic valves, heart and coronaries although it does occur is rare. Syphilis of the aorta must be regarded as a progressive pathological process first showing its ridge-like scarring in the suprasinus aorta above the aortic valve, where it may remain localized or more frequently extend down to involve the commissures and valves in a typical pattern, showing commissural infiltration and elevation and later valve separation which causes the diastolic murmur. The disease is not primary in the valve itself but as it spreads down the aorta and commissure it causes a marginal valve thickening and a hinge valve deformity.

In the suprasinus aorta where the coronary ostia are found the fibrosis may cause oedema, stenosis and even atresia of the coronary vessels with resulting ischemia of the myocardium.

On the ascending aorta the lesions may be:

1. Discrete scars.
2. Disseminated, numerous lesions with non-syphilitic aorta between.
3. Segmental with no normal aorta remaining in the affected segment.

Concurrent atheroma is more marked than that usually seen in non-syphilitic patients of a similar age.

Aneurisms may be fusiform which often produce no symptoms or saccular which press on adjoining structures to cause characteristic *symptoms,* if they extend into the posterior mediastinum, and more prominent *signs* if they extend into the anterior mediastinum. Work out these symptoms and signs on an anatomical basis.

Syphilitic aneurisms of the aorta are observed more frequently where the aortic valve is spared to maintain a high diastolic pressure against the weakened aortic wall than when there is aortic incompetence.

About 7% of all cases of syphilitic aortitis and aneurism showed negative serological reaction by any test such as Wasserman, Kline, Kahn, etc. —D.N.

The Influence of Climate and Geography on Health, with Remarks on Thiamin Toxicity

Clarence A. Mills, Professor of Experimental Medicine, University of Cincinnati (Bulletin of the New York Academy of Medicine, December, 1941) says that, under conditions where optimal ease of heat loss prevails, growth is most rapid, development of sex functions occurs earliest, fertility is highest, ability to produce immune bodies and to resist infection greatest, and energy most abundant for the support of an active existence. Body form is distinctly more rotund in stimulating coolness and general vitality higher by every mesurable index.

Even though mice be healthy and on a completely adequate diet, those adapted to a 90-91°F. environment are practically all dead from a pneumococcic inoculation before those at 65°F. begin to succumb. Among some 3100 tuberculosis deaths of indigent patients in a large sanatorium near Cincinnati, it was found that those patients born in Cincinnati or farther northward survived ravages of the disease twice as long as did those born in the states bordering the Gulf of Mexico. Actual survival times, from first symptom to death, were 22.7 months for northern-born whites, and 11.8 for the southern-born. Acute appendicitis also shows a markedly higher fatality-rate per 100 attacks in the south than in more invigorating northern latitudes.

In general it is infectious disease that kills off people in the tropics, while in cooler temperature regions death comes more from diseases of degeneration and metabolic breakdown (arteriosclerosis and heart fail-

ure, cancer, diabetes, etc.). Diabetic death-rates rise highest in urban populations across middle temperature latitudes of America. Only in the most stimulating climates does pernicious anaemia assume troublesome proportions. Its death-rate rises highest in those same middle temperature latitudes of America where diabetes death-rates are highest. Death-rates for toxic goiter, leukemia, and Addison's disease show similar climatic relationships. Non-infectious heart failures are about four times as frequent in winter cold as in summer warmth. Intelligence or aptitude tests given college students result in markedly lower ratings with tests given during summer heat. But certain hazards attend too active a pace of life, and it is this type of degenerative and breakdown disease which is now causing chief concern in the earth's most stimulating regions.

There occurs a marked increase in disability from a respiratory infection among employed workers during winter storminess. Rheumatic fever attacks show a similar seasonal variation in frequency. The Southwest (New Mexico, Arizona, and Southern California) is the only part of the United States unaffected by cyclonic storminess, and that is the region to which chronic sufferers from respiratory and rheumatic infections should go for refuge.

Twice as much thiamin per gram of food is needed by animals living in a 90°F. environment than by those kept at 65°F. Tropically produced foods seem much more deficient in the B vitamins than are those of middle temperate regions. Meat animals grow much more slowly in the tropics, and their flesh is itself deficient in the B fractions. It takes about 5 years in the tropics to produce a 1000-pound steer which in temperate coolness can be ready for slaughter at 1½ to 2 years. A 200-pound hog is produced in Panama in 12 to 15 months but in northern United States in 6 to 7 months! It is probable that this elevated vitamin requirement in tropical heat, coupled with the lowered vitamin content of the foods, is largely responsible for the tropical and sub-tropical distribution of such deficiency diseases as beriberi and pellagra. While studying the thiamin status of people in Panama during February and March of 1941, the author saw many evidences of severe toxicity in patients taking ten to fifty milligrams daily as a more or less routine treatment to obviate the tropical letdown so commonly seen in migrants from cooler climates. The toxicity symptoms were similar to those of hyperthyroidism: insomnia, increased nervousness, hyperirritability, emotional instability, rapid pulse, palpitation, and in many cases nausea and vomiting. Prompt subsidence of symptoms followed cessation of thiamin administration. No studies have been reported showing any clear advantage to be gained by dosages so far above the normal 2 to 3 milligrams daily need.

Personal Notes and Social News

Dr. Ray P. Brown of Gladstone, Man., son of Mr. and Mrs. J. E. Brown, is engaged to Gloria, daughter of Mr. and Mrs. B. Remis. The marriage is to take place Tuesday, October 5th.

◈ ◈

Dr. and Mrs. S. S. Toni of Altona, Man., are celebrating the birth of a son, on August 13th, at Bethonia Hospital.

◈ ◈

Dr. and Mrs. A. E. McGavin's daughter Margaret Grace, of Carman, Man., was married August 6th, 1943 at St. Andrew's Church, Halifax, N.S., to Lieut. John Stewart Reive, R.C.A., son of Mrs. Reive and the late Mr. J. E. Reive of Winnipeg.

◈ ◈

Captain Duncan Lloyd Kippen, No. 10 Company, R.C.A.M.C., has been appointed Medical Officer at No. 10 District Depot, Fort Osborne Barracks, Winnipeg.

◈ ◈

Major H. W. Wadge, recently retired from the army in M.D. 10, has been appointed medical adviser to the Manitoba Divisional Mobilization Board. He succeeds Dr. C. R. Gilmour, who recently retired as the Board's medical adviser.

◈ ◈

Lt.-Col. Lynn Gunn, formerly of the Royal Canadian Army Medical Corps reception centre board at Fort Osborne, has been appointed acting officer commanding to Chorley Park Military Hospital, Toronto.

◈ ◈

Dr. John A. McFadden of Dauphin, Man., was one of the successful candidates to pass the recent examinations held by the Medical Council of Canada.

Dr. Avard I. Fryer of No. 10 Company, R.C.A.M.C., Winnipeg, has been promoted from Lieutenant to Captain.

◈ ◈

Capt. Edgar D. Bissett of the Royal Canadian Medical Corps has been appointed District Hygiene Officer at M.D. 10.

◈ ◈

Dr. and Mrs. W. W. Musgrove, who have spent the last few weeks in Toronto, Ont., have returned to Winnipeg.

◈ ◈

Dr. Merle Patterson, daughter of Rev. D. R. Patterson and Mrs. Patterson of Glenboro, Man., will be leaving in the near future to take up medical missionary work in Central India.

◈ ◈

Dr. Digby Wheeler's beautiful garden won first prize and was awarded the Canadian Bank of Commerce trophy in the Greater Winnipeg garden competition.

◈ ◈

Dr. and Mrs. A. G. Meindl celebrated their Thirty-fourth Wedding Anniversary on Wednesday, August 18th, 1943. To commemorate the occasion, the family gathered for dinner at the Manitoba Club.

◈ ◈

Dr. and Mrs. H. L. Edwards of Birtle, Man., were the attendants at the Sutton-McLaren nuptials which were solemnized on August 18th.

◈ ◈

Major Alex. Swan, recently retired from active military service, has re-entered civilian medical practice in Winnipeg.

Second Annual Meeting

Manitoba Health Officers' Association

Royal Alexandra Hotel, Winnipeg — Monday, September 20th

Morning

12.00 Registration of Attending Health Officers.

12.30 Luncheon. Moore's Upper Floor Dining Room, 297 Portage Ave.

The Hon. J. O. McLenaghan, Minister of Health and Public Welfare, Province of Manitoba, will deliver an address.

All Health Officers will be guests of the Department of Health.

Chairman — Dr. Geo. Clingan.

Afternoon

2.00 Quarantine Regulations for Measles, Scarlet Fever, Pertussis and Diphtheria.
Dr. Martin, Neepawa.
Discussion opened by Dr. E. S. Bolton, Brandon.

2.40 School Sanitation.
Dr. C. E. Mather, of The Department of Health.
Discussion opened by Dr. M. S. Lougheed, Winnipeg.

3.15 Annual Meeting and Election of Officers.

4.00 Presidential Address.
Dr. George Clingan, Virden.

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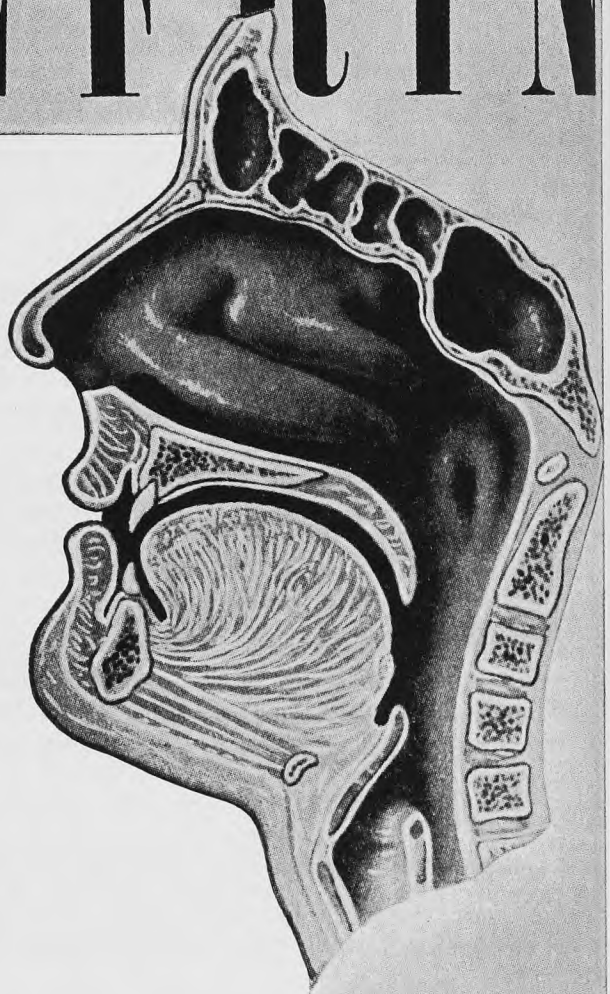

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Editorials and Association Notes

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Come to the Meeting

A few days' holiday in September will give you a physical rest, mental stimulation, and a chance to meet your friends. Remember that any diminution in your income also lowers your tax.

The quality of the programme speaks for itself. Now that the Canadian Medical Annual Meeting is cancelled, the provincial meetings are more necessary than ever.

The ladies are planning several interesting social events. The annual golf tournament will be as popular as ever and, from present indications, the competition for the several trophies will be keen. Both scientific and commercial exhibits will be shown.

Visiting Speakers
Annual Meeting—September 20-22

DR. SCLATER LEWIS—President of the Canadian Medical Association, qualified at McGill in 1912, and was Assistant Professor of Medicine there 1929-37 and Associate Professor of Therapeutics 1932-37. He is on the staff of the Royal Victoria Hospital. He will speak on "Chest Pain" and on "Functional Albuminuria."

DR. GAVIN MILLER—Qualified at McGill in 1922 and then spent two years in Peking Medical College and one year at the Henry Ford Hospital. Five years later he spent a year in Vienna with Finsterer doing Gastric Surgery. He is now Assistant Professor of Surgery at McGill, and is on the staff of the Royal Victoria Hospital. He will speak on "Anorectal Conditions" and "Peripheral Circulatory Disorders."

DR. R. F. FARQUHARSON—Qualified at Toronto in 1922. He is Assistant Professor of Medicine and Therapeutics at the University of Toronto. He speaks on "Some Modern Pharmaceuticals" and "Physical Manifestations of Emotional Disorders."

DR. WILLIAM BOYD—Qualified at Edinburgh in 1906. During his tenure of the Professorship at the University of Manitoba from 1915 to 1937 his textbooks of Pathology achieved world-wide popularity. In 1937 he went to Toronto. He will speak on "Tumours of the Neck," "The Relation of the Kidney to Hypertension," and will address a public meeting on "Cancer Control."

DR. T. C. ROUTLEY—General Secretary of the Canadian Medical Association, accompanies the four speakers on their tour of the four Annual Meetings of the Western Divisions of the Canadian Medical Association. Much of Dr. Routley's work in the past year has been in Ottawa on the Canadian Medical Procurement and Assignment Board.

Does This Mean You?

Payment of membership dues for 1943 have been only fairly satisfactory.

There are still too many men in active practice who are willing to "Let George do it." If this means "you" may we ask you to send in your $15.00 now and thus pull your share of the load which this year is a heavy one.

Work necessitated by the proposed Health Scheme has increased the expense of our Association very materially and only by a fully paid-up membership can we continue this work and still leave dues at $1.25 per month.

Did you ever stop to wonder what other insurance you could buy to protect your professional interests for such a small outlay? Don't fail to attend the Annual Convention, September 20th, 21st and 22nd, and make sure that you are in good standing by remitting your past-due fees now.

W. G. Beaton, Treas.

Obituary

Dr. Allan J. Davidson, aged 53, died in the Winnipeg General Hospital on August 13 after a brief illness. Graduating in medicine from Manitoba University in 1920,, he practised for a few months in Birtle, then moved to Winnipeg and carried on his practice there. An enthusiastic photographer, he was an active member of the Winnipeg Amateur Cinema Club, and made moving pictures of surgical operations. He was a member of St. Margaret's Anglican Church, also of the Masonic Order and the Scottish Rite. He is survived by his widow, a son Allan who is a medical student, and a daughter.

Allan Davidson, a quiet, conscientious, hard-working general practitioner, was a credit to the profession and his death at a comparatively early age is a real loss to the community.

Important
Re: Gasoline Rations

When your gasoline ration tickets are exhausted would you kindly return the empty book, with proper notations on inside cover, directly to the Regional Office of the Oil Controller, as directed on Page 1.

This will avoid much unnecessary delay.

W. G. Campbell, Registrar.

The Meyers Memorial

The Canadian Medical Association receives the sum of $100.00 a year from the estate of the late Dr. Campbell D. Meyers of Toronto to provide an honorarium to be known as the Meyers Memorial.

Dr. George Boyer, Chairman of the Meyers Memorial Committee, calls attention to the fact that very few papers are presented for this award.

The thesis or dissertation for which the award is made is to be based on the study and treatment of those functional neuroses which, if untreated, or not treated sufficiently might terminate in insanity.

This is a study of great importance now, and likely to be of greater importance in the unsettling post-war years. Any member of the Canadian or of a Provincial Medical Association who is interested should consider the preparation of a paper on functional neuroses. Only one paper can receive the award but even for the unsuccessful the study of the subject and the marshalling of ideas will be of greatest value.

The conditions of the award as defined by the donor are:—

(1) That the award shall be made " . . . to such member or guest of the Canadian or of one of the Provincial Medical Associations as shall write and read at the annual meeting of any of the said Associations the best thesis or dissertation. . . ."

(2) That the subject shall be ". . . the study and treatment of those functional neuroses which, if untreated, or not treated sufficiently early might terminate in insanity. . . ."

". . . it is impossible to classify definitely the type of diseases referred to above. I desire however to refer to those Functional Neuroses in which the psychological symptoms form the essential part of the syndrome, and to that type of Neurosis which develops in late adolescent or in adult life in a patient of previous good mental and nervous history, especially such neurosis as has its etiology in emotional overstrain caused by excessive grief, worry and allied conditions. . . ."

"I desire to exclude from this thesis the study of Mental Defectives, paranoia and similar conditions of mental disease due to hereditary or organic states. . . ."

(3) That the award shall be made ". . . by a Committee consisting of the President, a physician and a neurologist. . . ."

Anyone wishing to submit a thesis is advised to confer in advance with the Chairman of the Meyers Memorial Committee (through the office of the Canadian Medical Association) in order to make sure that his thesis will come within the terms of the award.

The thesis must be in the hands of the Chairman of the Meyers Memorial Committee on or before May 31st if it is to be considered for the award of that year and should be forwarded to him at 184 College Street, Toronto. Any thesis received after May 31st will be considered as being submitted for the following year.

Commercial Exhibitors at Annual Meeting

Doctors will have the opportunity of visiting the following business organizations who will have displays at our Annual Meeting on September 20, 21 and 22 at the Royal Alexandra Hotel, Winnipeg. Officials and representatives of the following companies will be in attendance to give information on the products displayed. The following list of exhibitors includes only those who have made reservations at the time of going to press.

Anglo French Drug Co.
Ayerst, McKenna & Harrison Ltd.
Brathwaites Ltd.
Ciba Company Ltd.
Eli Lilly & Company Ltd.
Fisher & Burpe Ltd.
Chas. E. Frosst & Co.
E. R. Squibb & Sons Ltd.
Winnipeg Drug Co. Ltd.
Winthrop Chemical Co. Inc.
John Wyeth & Brother Ltd

We wish to acknowledge the reservation of "Display Cards" from the following firms:—Campbell & Hyman Ltd.; Parke Davis & Co.; Robert Ramsay; Stevens & Son Ltd.; Victor X-Ray Corp.

We Often Learn by Contrast

The following two extracts, one from Robert Louis Stevenson's Classic Tribute to the Physician, and the latter Supplementary Evidence of A. B. Davies, delivered June 10th, 1943, before the Special Committee on Social Security of the House of Commons. Further comment is unnecessary:

◈ ◈

"There are men and classes of men that stand above the common herd: the soldier, the sailor, and the shepherd not infrequently; the artist rarely; rarelier still, the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilization; and when that stage of man is done with, and only to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those that practise an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, herculean cheerfulness and courage, so that he brings air and cheer into the sick room, and often enough, though not so often as he wishes, brings healing."

◈ ◈

Representations of A. B. Davies

I beg you humbly to allow this additional brief, to be added to my above enumerated evidence, the contents of which I deem of *vital importance* to the public interest of our country.

If Dr. J. J. Heagerty's evidence, recorded in the Minutes of Proceedings No. 2, page 58, dated Friday, March 19, 1943, can be taken as a criterion, *every medical practitioner in our country will receive $10,000 annually* from our public funds, yet only a portion of their services will be subsidized . . . .

It appears unbelievable, spurious and impossible, but we cannot deny the fact that I am quoting Dr. Heagerty, who, as stated above, gave evidence before you to this effect, saying ". . . *42 per cent of the moneys expended for medical care in the United States goes to the doctor; in Canada approximately 44 per cent.....*" and if we believe in figures, 44 per cent of the total amount asked for medical care, annually, in Canada is $105,600,000, which divided among the total number of medical practitioners in our country (10,500) will exact for each one a net grant of over $10,000, without however conscripting their full time services.

Again, according to Dr. Heagerty (Minutes of Evidence No. 2, page 56), the National Health Insurance scheme proposed now to you for study and ratification, is practically a repetition of the similar Health Insurance, practised in England since 1912; though again Dr. Heagerty himself, stated in his same evidence on pages 47 and 55 respectively that ". . . It has been demonstrated that there has been no improvement in the Health of the British people through health insurance, since it was introduced in England, put into effect in the year 1912" and again (page 55) ". . . As I indicated at the outset, in England *there are just as many people coming up to-day for medical care, as in 1912* when the scheme went into effect. . ." In other words, honourable gentlemen, you are asked to sanction an annual subsidy for medical care to the amount of $240,000,000, and to pay enough so that if the granted amount be apportioned equally among all the medical pracitioners in the country, each shall receive $10,000 a year, *for either repeating a positively proven failure* of 30 years' standing (the British plan of health insurance) or *for the perpetuation of an equally proven failure* (the status quo of health services now in operation) as the Honourable Minister of Health gave you to understand in his evidence of March 16, 1943 (Minutes of Proceedings, No. 1, page 30, paragraphs 3 and 4) I quote: ". . . The Committee's purpose has been to disturb the normal existing arrangement and customs of the people as little as possible . . . As provided for in the recommended scheme, the *sick person will, as now, see the physician of his choice. The family doctor may call in a specialist if necessary, and may order nursing attendance or hospitalization,* and he may prescribe medicines, or other treatment facilities" and the following paragraph *"the big difference will be that the doctor, the nurse and the hospital will send their bills to the health insurance fund instead of to the patient.*

Dominion vital statistics, recorded in the Canada Year Books of 1920 and 1942 definitely show that though our population is practically the same now as then, yet, our hospitals have increased 70 per cent, our regular and mental patients in our health institutions have increased 480 per cent and their expenditures 800 per cent. Should the requested grant of $240,000,000 be legislated, then the expenditure for health services will be increased 1000 per cent. *This is the record which our various health authorities are boasting about and presenting to you as their only guarantee* for the gigantic amount asked for caring for the sick of our counrty.

In conclusion, honourable gentlemen, allow me to emphasize and remind you kindly, the evidence of Mr. Herbert Hannam, the president of Canadian Federation of Agriculture (who so selflessly and devotedly worked for the success of socialized health services in our country) read to you on the same day as my evidence (June 10, 1943) also Honourable George

Hoadley's "Canada's Health," who also worked so wonderfully with Mr. Hannam for socialized health services, both of which so graphically depict medical services in our country as being utterly inadequate, even deplorable and almost repulsive. Who (our medical practitioners), can easily forget our country's 23,000 annual deaths from cancer and 34,000 deaths from heart diseases and are asking you to allow them to poison the bloodstream of *every Canadian,* with an intent of preventing either the 180 deaths from smallpox, or 214 deaths from diphtheria, yet *never attempting to do anything to prevent either cancer or heart diseases.* Who, like the Brahmins of India, holding themselves out as a privileged class, aloof of all possible equality with the rest of us, now refuse to submit themselves to the authority of our legally elected government. Therefore I humbly submit, that you kindly recommend to our Parliament that since the services of medical practitioners are now in demand for the successful culmination of our war efforts, *their services be conscripted and each of them be given a stipulated wage* to carry on caring for the sick, as our armed forces are carrying on the fight against totalitarian doctrines and authorities at the present time.

A Parable

George asked his friend Bill if he would like to go fishing. Said George to Bill, "I have a swell, comfortable cottage, all the fishing tackle we will need and a sleek sea-worthy boat, in fact everything necessary for a grand outing."

Bill accepted George's hospitality and then some. He not only took advantage of the cottage, the fishing tackle and the boat, he also did all the fishing while George did all the rowing. Bill's attitude was "Let George do it" while he contributed nothing whatever to assure what should have been a highly successful outing.

After reading "We Often Learn by Contrast" and Mr. A. B. Davies' "Supplementary Evidence," is it possible for any medical man in the Province to disregard the "Hand Writing on the Wall?" There are still a number of doctors in Manitoba who are in the same category as "Bill." They are reaping all the benefits made possible by the joint efforts of the Canadian Medical Association and the Manitoba Medical Association but have contributed little or nothing in moral or monetary support. It costs money to operate our Association, which is in existence solely for your benefit. Send in your membership fee now. $15.00 includes membership in the C.M.A. and the M.M.A., with subscriptions to both Journals.

Social Security

Minutes of Proceedings and Evidence No. 22

The following is a brief submitted by the Associated Committee on Medical Research of National Research Council. Our readers will understand that the brief is that of the National Research Council and does not necessarily mean the endorsation of the Manitoba Medical Association. This brief was submitted on June 16th, 1943, before a special committee on Social Security in the House of Commons:—

The Witness: Mr. Chairman, ladies and gentlemen: The Associate Committee on Medical Research, of the National Research Council, wishes to lay before the Special Committee on Social Security of the House of Commons, evidence that the National Research Council should be entrusted with the direction of any medical research program which will spring from the application of a national health insurance act.

The past twenty years have been more fruitful in medical research than any other period in the world's history. In Canada, the growth of such research sprang from the discovery of insulin. What this gift has meant to the world is well described in a statement by a large insurance company. "To-day, the average diabetic child of ten may be expected to celebrate his fiftieth birthday, whereas just prior to 1922 most diabetic children lived little more than one year after the onset of their disease. At age thirty expectation of life is now twenty-seven and one-half years, compared to little more than six years in the days before insulin. Even at age fifty the improvement is sizeable, with an expectation of life of fourteen and one-half years today which is 50 per cent more than in the pre-insulin era. And these added years of life are useful and active, not years of invalidism. The diabetic of to-day is usually able to take his place in the home and in the community and to lead an almost normal life. The diabetic child goes to school and joins his comrades in study and play. The adult diabetic is a steady and productive worker and competes successfully with his co-workers. Moreover, this great improvement in the active life of the typical diabetic is of particular importance, because the number of these persons in the population is actually increasing through the aging of the population and through the increased survivals of younger diabetic patients to older ages. The diabetics in the United States and Canada alone number more than one million, and a very large proportion of these require insulin." But Canadians should be grateful for the discovery of insulin also because it has stimulated other young men to investigate the secrets of the mechanisms of life and the treatment of other types of diseases. Canadian discoveries in the hormone and other fields have given Canada a pre-eminent place in medical research.

The Canadian Medical Association, in 1937, passed a resolution petitioning the Committee of the Privy Council for Scientific and Industrial Research to authorize the National Research Council to set up an associate committee for medical research. It also asked for a conference of representatives of interested bodies, viz. faculties of medicine, medical research institutions apart from medical schools, dominion and provincial departments of health, and nationally organized medical associations, i.e. the Canadian Medical Association and the Royal College of Physicians and Surgeons of Canada and other bodies. The function of the conference is to nominate to the National Research Council the personnel of the associate committee on medical research, and to outline the scope of its duties and responsibilities.

The conference was held in February, 1938. It recommended that an associate committee be set up under the chairmanship of Sir Frederick Banting, with the following terms of reference:—

(*a*) To receive suggestions for requirements in respect of medical research, and in matters related thereto.

(*b*) To consider by whom investigations required can best be carried out, and to make proposals accordingly.

(*c*) To correlate the information when secured and to make it available to those concerned.

(*d*) To do such other things as the committee may deem advisable to promote medical research in Canada.

The associate committee was set up within three months. Its members were mainly from the medical faculties of universities, chosen for their proven ability and interest in special fields of medical research, with ample geographical representation. It conducted surveys of medical research facilities in Canada. The interest in research among young medical men amazed even the chairman, Sir Frederick Banting, and plans were laid to embark upon an extensive investigation, particularly of certain chronic diseases.

The committee invited research workers in the different universities and research institutions in Canada to submit problems they were prepared to investigate and to request grants in aid of their research. After reviewing the problems outlined in the applications submitted, based on the nature of the problem, the possibility of solution, the facilities for research and the financial need of the university or institution concerned. All three of these were taken into account. In the expenditure of these funds many young men and women had an opportunity of learning and practising research methods under recognized Canadian

investigators. This program had barely started when we entered the war.

The needs of the armed services now took precedence over peace time research. The funds of the associate committee and the work of the young men and women in the laboratories now became diverted to the acute medical problems in relation to the war. Three additional associate committees were created, one to supervise research for each of the armed services. Many medical men who had been employed in laboratories in the universities joined the armed forces and were set at investigating their particular problems. Medical teachers who remained at their posts gave up their peace time researches to investigate war problems, and to direct the work of young men in the services. I may say, ladies and gentlemen, that Professor Graham is chairman of the Aviation Research Committee, Colonel Brown is chairman of the Army Research Committee and I have the pleasure to direct the activities of the Naval Research Committee.

The research laboratories in Canadian medical schools are now almost entirely engaged in investigation of problems concerning war. Here the researches of the associate committees on naval medical research, aviation medical research and army medical research are under way, partly through activities of young men seconded from the services to these laboratories, and partly through work of civilian investigators. The problems chiefly concern measures to provide comfort, safety, selection of personnel and adaptation to the conditions and implements of modern warfare. The original associate committee on medical research explores fundamental war medical problems which may involve any or all of the services. Professor Collip is chairman of the original associate committee and also chairman of a co-ordinating committee which integrates the actions of the four committees.

Such a program has had two notable results. First, it has meant laying aside the fundamental problems, e.g., in physiology, biochemistry, pharmacology, and in the various fields of clinical research, which would normally engage the personnel of Canadian laboratories and clinics. These are problems which affect the health of Canadians. Their investigations must be postponed, but not abandoned. They are still with us, and they must be explored when the war is over.

Second, it has built up a large and capable medical research organization. The Associate Committee on Medical Research, and the other associate committees dealing with medical research in the services, are integrated through the National Research Council. They are composed mainly of university teachers and research investigators whose services come to the National Research Council without cost. Their membership sometimes overlaps, and that is a very good thing. Most of their work is done in medical laboratories in the universities, where the directors give their time without cost. A large body of young investigators is being built up into efficient units. Important discoveries have been made, many of such a secret nature as to be disclosed to a very few. Some of these discoveries have been so fundamental as to precipitate requests for sharing them with the armed forces of our allies. Through the National Research Council there is frank interchange of ideas with the Medical Research Council of Great Britain, and the National Research Council of the United States. In short, there has never in Canada been such a large and well-trained group of young medical research investigators, well knit together with careful integration of their work. This organization, we feel, should be made permanent.

When the war is over these, and other young people who will be added to them, will be trained and eager to investigate the nation's peace time problems. They will have been brought to this state under the National Research Council. They will be available to the Associate Committee on Medical Research which, as a central organization, will know the Canadian field, and will have had the experience of directing work with economy and productiveness. This committee has had and will continue to have the advice and confidence of all the prominent Canadian medical research workers.

The associate committee feels that at the conclusion of the war there will be an accumulation of medical problems of the civil population, which will be as urgent for them as are the medical problems of the services to-day. A much larger amount of money will be needed for their investigation than was available before the war. They can be most economically and successfully attacked through the organization which has been built up by the National Research Council, and which has been functioning in these last five years with conspicuous success.

Dr. J. B. Collip: If I may answer your question, sir: in 1939-40 our grant was $52,965 expenditures on a peace-time basis for that year were $33,983. Our grant in 1940-41 was $52,000 of which we expended $30,000 to $35,000; and that compares with the war appropriation in 1939-40 of $10,000; 1940-41 of $26,000; and 1941-42, $18,000 and for 1942-43, $51,000. That is just for the associate committee. The aviation medical committee have a much larger grant than the others, and the army medical—perhaps Lt.-Col. Hurst Brown could tell you about that.

Lt.-Col. Brown: This year there will be set aside for the purpose of army medical services $100 000. We do not expect to use up anything like that, at the present time I think we have only expended about $37,000.

Dr. Collip: It is very difficult to think of a figure, but roughly I think we should have a grant of half a million dollars a year and that it could be well spent, if not more.

Mr. McCann: Are your laboratories for carrying on this work located with the National Research Council up here at Ottawa, or is this work being done in the universities?

The Witness: In answer to that question, there has been no central laboratory in Ottawa but rather the work has been done through grants to the universities; although it has been the general opinion among us that it would be wiser, certainly at this stage of our development, to encourage research in the universities all across Canada rather than centralizing in any one place.

Mr. McCann: On what basis is that distribution made?

The Witness: So far, I think, on the number of young men with problems which have to be put up to the central committee; the number of young men available and their interest in research in the various places; and if the problems are good, after being carefully weighed the funds are divided accordingly. But at the present time there are practically no young men available and as we now operate the funds are spread clear across Canada.

Mr. McCann: Is it your opinion that it would be preferable to establish a central research laboratory here at Ottawa?

The Witness: It would be my personal opinion that at this stage of developments it would be wiser to keep it with the universities where they have contact with their teaching hospitals and various other departments of research along very similar lines. I think that would be much wiser.

Dr. Collip: I think that speaks for the committee as a whole.

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Department of Health and Public Welfare

Comparisons Communicable Diseases—Manitoba

(Whites Only)

DISEASES	1943		1942		TOTALS	
	June 20 to July 17	May 23 to June 19	June 18 to July 15	May 21 to June 17	Jan. 1 to July 17,'43	Jan. 1 to July 15,'42
Anterior Poliomyelitis	1	4	6	9	14	25
Chickenpox	90	165	127	146	1077	1457
Diphtheria	11	16	16	20	164	120
Diphtheria Carriers	....	4	1	1	16	7
Dysentery—Amoebic	....	4	....	....	6	....
Dysentery—Bacillary	....	....	1	....	5	6
Erysipelas	4	8	10	7	41	59
Encephalitis	1	....	4	4	3	10
Influenza	4	27	1	3	361	175
Measles	332	432	198	524	2231	4236
Measles—German	17	61	9	34	159	261
Meningococcal Meningitis	1	2	....	4	20	16
Mumps	167	316	104	233	2990	2593
Ophthalmia Neonatorum	....	....	....	....	....	1
Pneumonia—Lobar	6	4	5	10	104	80
Puerperal Fever	....	....	....	....	1	2
Scarlet Fever	102	185	75	143	908	1015
Septic Sore Throat	3	6	3	2	29	58
Smallpox	....	....	....	....	....	....
Tetanus	....	....	....	....	....	1
Trachoma	....	....	....	1	2	4
Tuberculosis	60	42	79	39	352	302
Typhoid Fever	....	4	....	1	17	7
Typhoid Paratyphoid	3	....	....	1	3	1
Typhoid Carriers	....	....	....	....	1	1
Undulant Fever	1	....	1	1	4	6
Whooping Cough	87	145	32	27	1363	153
Gonorrhoea	115	130	95	94	1053	653
Syphilis	44	51	31	55	307	390
Meningitis Carriers	....	....	....	....	6	....

Communicable diseases have not been a serious problem during this four-week period. Only one case of Poliomyelitis was reported and it would appear that we are going to get by this year without a great deal of worry from this disease—it is to be hoped for anyway.

It is to be noted that two cases of Smallpox were reported from Saskatchewan. This serves to add emphasis to the need for keeping our population immune by systematic and thorough vaccination and re-vaccination—by these measures alone can a widespread epidemic of this disease be prevented as sporadic cases are always with us.

From the time since the roads opened in the spring and up until school closed for the summer vacation, we have been encouraging the Medical Officers of Health to carry on immunization programs. Much has been accomplished to date and our Nursing Division reports assisting at the following completed immunizations:

Diphtheria Toxoid	23586
Smallpox Vaccination	6166
Combined Pertussis and Diphtheria Toxoid	2260
Scarlet Fever Toxin	1175
Dick Testing	108
Pertussis Vaccine	164

Some other clinics still have to be completed with the opening of the fall term. It is anticipated that more will be started at that time. How about your Municipality, are your children all protected? Early plans will help to make nursing assistance readily available.

DEATHS FROM COMMUNICABLE DISEASE
June, 1943

URBAN—Cancer 53, Tuberculosis 10, Pneumonia Lobar 5, Pneumonia (other forms) 4, Whooping Cough 4, Syphilis 2, Influenza 1. Other deaths under 1 year 41. Other deaths over 1 year 188. Stillbirths 16. Total 324.

RURAL—Cancer 27, Tuberculosis 15, Pneumonia (other forms) 10, Pneumonia Lobar 7, Whooping Cough 3, Influenza 1, Measles 1, Syphilis 1, Septicemia 1. Other deaths under 1 year 24. Other deaths over 1 year 162. Stillbirths 21. Total 273.

INDIANS—Tuberculosis 6, Pneumonia Lobar 3. Other deaths under 1 year 2. Other deaths over 1 year 11. Stillbirths 1. Total 12.

DISEASE	Manitoba June 20-July 17 *737,935	Ontario June 20-July 17 *3,824,734	Saskatchewan June 20-July 17 *905,974	Minnesota June 20-July 17 *2,792,300	North Dakota June 20-July 17 *641,933
Anterior Poliomyelitis	1	2	....	5	1
Meningococcal Meningitis	1	7	....	9	5
Chickenpox	90	588	179	....	....
Diphtheria	11	3	3	8	6
Erysipelas	4	2	5	....	2
Influenza	4	83	4	3	37
Lethargic Encephalitis	1	1	....	....	....
Measles	332	3262	189	849	298
German Measles	17	215	32	....	1
Mumps	167	711	68	....	20
Opthalmia Neonatorum	....	3	....	....	....
Leprosy	....	1	....	....	....
Scarlet Fever	102	266	117	65	8
Septic Sore Throat	3	1	....	....	....
Smallpox	....	....	2	....	....
Tetanus	....	1	....	....	....
Trachoma	....	....	....	....	1
Tuberculosis	60	229	14	....	27
Typhoid Fever	....	2	1	1	....
Typhoid Paratyphoid	3	3	....	....	....
Undulant Fever	1	5	....	21	1
Whooping Cough	87	499	59	266	58
Dysentery, Amoebic	....	2	....	8	....
Tularemia	....	....	....	2	....
Syphilis	44	489	....	....	26
Gonorrhoea	115	468	....	....	9

*Approximate Populations.

Department of Health and Public Welfare

Government Requirements for Water Works Projects

Abridgment of a paper delivered by Mr. John Foggie, Chief Sanitary Inspector, Department of Health and Public Welfare, to the Water and Sewage School under the auspices of the Minnesota Section of the American Water Works Association, held in Winnipeg—July, 1943.

At the present time there are thirteen public water supply systems in operation in Manitoba, serving a population of approximately 357,000, a little less than half of the estimated population of 723,000 persons. Eight of these supplies are from rivers, three from lakes and two from deep wells. Treatment varies in the case of the surface supplies, from the use of pressure filters with final chlorination, in plants which were constructed some thirty years ago, to the more modern treatment works where the processes essential for the satisfactory treatment of surface waters may more readily and effectively be carried out to produce waters of much finer quality, physically and bacteriologically. Two plants of modern design have been constructed within the past eight years, to replace the older type of works, and with continued excellent results.

In regard to the public water works projects which may be constructed in the future—post-war construction—a number of smaller towns might very well install water works systems, the natural facilities being available, and it would appear that finally about 400,000 persons might eventually be served through properly constructed and controlled public water supplies. The rural population, more isolated, will continue to use private water supplies, from wells, dugouts, etc. It may not be supposed that the rural population are without satisfactory waters entirely, for during the past twelve years we have supervised plumbing and septic tank installations in seven hundred rural homes, and in all cases, opportunity has been afforded to apply government requirements, particularly in improving the construction of wells of all types and carrying out their final sterilization. While the public water works and distribution systems, sewerage and sewage treatment plants, cater to large numbers of persons living in relatively small areas, the installation of water systems under pressure, and complete sewage treatment systems in 700 rural homes, means approximately 90,000 gallons of water and sewage disposed of daily with comparative ease, and to the benefit of about 3,000 persons. This would mean a fair-sized town, but the nearest water course would be the recipient of more than 90,000 gallons of sewage effluent daily. So, while the small plumbing and septic tank or "glorified cesspool" installations appear of small consequence, their multiplication creates a fair-sized water and sewage disposal proposition. While these small installations do not quite come under the heading of water works projects of larger magnitude, they are of interest since we have to use governmental requirements for their installation and control. Under the regulations respecting Plumbing and Drainage, permits are required for these undertakings; submission of plans and other data regarding water supply, estimated load, design, capacity, and construction of septic tanks, syphon chambers, capacity of field tile systems, and suitability of the subsoil for absorption. Plumbing is installed according to the provisions of the regulations, inspected and tested. Useful data may be accumulated in regard to types of soil and the availability of water, and the relative depths at which water may be obtained.

Requirements

for water works projects are contained in the regulations under "The Public Health Act."

When the establishment or extension of a system of water works for providing water supply for public consumption is contemplated by a municipality or by a person or body corporate, there shall be submitted—(a) the plans, specifications, engineers' reports, and estimates, and such other information and data as may be called for in connection with the proposed system or extension, verified by affidavit, stating that the plans and specifications submitted are those to be used and followed in the proposed construction or extension—and such chemical, physical and bacteriological analyses of the water as may be considered necessary from the proposed source or sources of supply, also verified by affidavit stating that the particulars set forth are true, and that the water analyzed was taken from the proposed source or sources.

Certificate to Construct

No system of water works, and no extension of a system, may be constructed or operated without first obtaining from the Minister a certificate, that the plans, specifications, and analyses so submitted, and the proposed source or sources of supply have been considered and approved, and that the proposed system or extension may, with safety to the public health, be constructed, carried out and operated.

Alterations

If alterations are necessary in the plans or specifications, the Minister shall notify the municipality of the necessity of such alterations, specifying the same, and a certificate shall not be granted until such alterations have been made.

Quality in Existing Systems

If, in the opinion of the Minister, the quality of water of an existing system constitutes a menace to the public health, such changes or additions to the system shall be made by the municipality, person or body corporate, in such manner, and within such time, as the Minister may direct.

Financing and Relation to Municipal By-laws

In financing such projects, there are sections relative to the raising of funds—no municipality shall submit to a vote of its electors a By-law authorizing the raising of money for the construction, alteration or extension to a system of water works, until it has obtained:

(a) a certificate from the Minister under the provisions of the regulations, and

(b) a provisional certificate stating that the proposed construction may be carried out, provided the plans and specifications are approved.

(2) No debentures issued under any such By-law shall be valid until the municipality has obtained from the Minister a certificate under the provisions of these regulations.

Responsibility of Municipal Councils for Proper Operation of Plants

Municipal Councils, persons or bodies corporate are responsible for the efficient working and control of the water works and distributing system, and for the safety of the public water supply. All water works systems shall be under the control of a competent superintendent or operators. These are the principal requirements for municipal undertakings. Under the regulations entitled "Water Supplies," there are general requirements covering all types of water supplies, viz:

> Municipal Councils shall provide one or more sources of water supply for the use of the inhabitants, and shall be responsible for their sanitary quality, safety and maintenance. All water supply systems shall be free from sanitary defect. The quality of the water for drinking and domestic purposes, food processing or manufacture, and in any business or industry, shall meet accepted standards of purity and be approved by the Medical Officer of Health or the Minister.

Construction of Wells

Wells shall be so located, constructed and protected and maintained as to prevent contamination. Casings shall be of impervious material, watertight construction, installed in an approved manner, and extended to a sufficient height so as to prevent contamination or pollution by flooding. Well tops shall be of substantial concrete construction so arranged as to divert waste water and provide a base on which a pump may be secured and bolted down to a suitable gasket, and in such manner as to make a watertight connection.

As a protection to new deep well supplies—there are also certain sections which require the permanent or temporary sealing of old or abandoned wells, or wells placed out of service, and the absolute prohibition of the use of any well or abandoned well for any type of waste disposal. Where any well is in use,

or is constructed for use in connection with any manufactory, industry or place of business, such supply, together with the piping and distributing system, shall be approved by the Medical Officer of Health, who shall, in addition, require further treatment or sterilization of such supply if, in his opinion, any condition exists which may endanger the quality of water. Where there is no organized department of health, it is the duty of the Medical Officer to advise the Minister in writing, requesting that such inspection and approval be undertaken.

This section was specially inserted to cover the isolated small industry, which, if left to itself, often develops within its own walls a rather remarkable water and waste disposal system, and, occasionally, cross connections and other adverse conditions which often lead to serious consequences, particularly, cross connections.

Surface Waters—Compulsory Sterilization

Surface waters, including the waters of rivers, lakes, creeks, dugouts or ponds, shall be considered as dangerous and are required to be boiled or chlorinated before use.

Chlorination of Water

Where chlorine or any of its compounds are used in the sterilization of any public or private water supply, all chlorinating equipment shall be maintained at all times in efficient working order. Such spare parts as may be necessary shall be kept ready for use in case of emergency.

All water so chlorinated shall be tested at regular intervals during the operation of the plant, for free or residual chlorine, by the water works operator, using the standard orthotolodin testing reagent, color standards, equipment and technique. There shall be maintained a free or residual chlorine of not less than 0.1 or more than 0.2 parts per million fifteen minutes after application.

The operator shall keep a record of all such tests, which shall be available at all times to the Medical Officer of Health or the Minister.

Sampling and Bacteriological Analysis

Samples of water of all public supplies shall be taken as often as considered necessary in a manner prescribed by the provincial bacteriologist, and be submitted to the laboratory in the sterile bottles and containers provided for that purpose, together with a description of the source of supply or any other information necessary. The results of analysis are submitted by the Medical Officer of Health to the municipal council.

Prohibition of the Use of Other Supplies

No person shall use water for drinking or domestic purposes from any source other than that provided and controlled by the local authorities, except by permission of the Medical Officer of Health or the Minister.

The last three requirements—Chlorination and Chlorine Residuals, bacteriological analyses, and prohibition of the use of other supplies—are of special importance. In chlorinating, there has been little departure from the ordinary routine procedure, and no special demand for superchlorination, breakpoint, or the chloramine processes. No bacteriological standards for water have been adopted in the regulations. Our objective is that all treated waters shall be consistently negative for organisms of the coliform group in 1 cc. amounts, with zero or very low bacterial plate counts. In addition to sampling by the local authorities, the department makes periodic visits to treatment plants, checking chlorine residuals, examining records, and obtaining samples of the finished water at the plant and at varying points on the distribution system. Through this procedure a double check is made.

The regulation prohibiting the use of waters other than those under local control, discourages the use of other supplies which may be of a suspicious or dangerous nature.

Plumbing and Cross Connections

As the distributing systems of water works projects and piping within buildings may, under certain conditions, receive polluted water, the following sections are contained in the regulations respecting Plumbing and Drainage:

> A distributing system for a water supply for drinking and domestic purposes, shall not be connected with the distributing system of another water supply, unless such connection is approved by the Medical Officer of Health or the Minister.
>
> No plumbing, plumbing fixtures, construction, device, valve, fitting, apparatus or connection shall be installed or permitted which will provide a cross connection between a distributing system of water for drinking and domestic purposes, and a plumbing and drainage system, in such a manner as to permit or make possible the backflow of sewage or waste water into the water supply system.

Prevention of Water Pollution

For the further protection of raw surface waters, and the reduction of pollutional load used in water works projects, we have under the heading of "Protection of Water Sources" a number of sections which specifically prohibit the deposit or discharge of any form of liquid or solid waste into any stream or water course used for public or private water supply purposes.

Where bodies of water, such as lakes, are in use, certain areas surrounding these bodies of water may be specifically described and included in special survey plans, declaring such to be Sanitary Areas under the regulations. The mining towns of Flin Flon and Sherridon in Northern Manitoba, deriving their supplies from the lakes, are so protected.

These, then, are briefly the requirements contained in the regulations under the Act, which may be summarized as follows:

> The submission of plans and specifications, engineers' reports, analyses of water from proposed source or sources, and such other information as may be necessary. The water supply system shall be free from sanitary defect. Local authorities responsible for the efficient running and control of the system and safety of the water supply. Competent superintendents or operators in control. Sterilization of all surface waters is necessary, with proper control of chlorination and estimation of residuals. Sampling and bacterial analyses.

With these brief requirements, we have covered the most important factors in water works projects, except for the actual design, construction and equipping, to treat either ground or surface waters. a matter requiring very careful consideration by chemist, bacteriologist, sanitary engineer, and consulting engineer of experience. The use of the term "sanitary defect" is one of great value as it covers a multitude of conditions which may exist—such as any faulty structural condition, whether of location, design, or construction of water collection, treatment or distribution works, which may regularly or occasionally cause the water supply to be contaminated from an extraneous source, including dual supplies, by-passes, cross connections, or interconnections, or fail to be satisfactorily purified.

If water becomes unsatisfactory or a menace to public health, and, consequently, a hazard, the cause may be faulty operating conditions, including any device, or water treatment practice, which, when introduced into the water supply system, creates, or may create, a danger to the well-being of the consumer.

The regulations, then, are sufficient to bring into play about every requirement in any water works project, but are free from any detail. For such detail, we must apply all of the theory and practice of sanitary engineering relative to water supplies as a whole. The preparation of a code, or minimum standards for water supplies, has been given consideration, and as the department has progressed further within the last year and seen the addition of an engineer and chemist, we are in a better position now to undertake a work of this nature. The information contained therein, based on standard works, would be of great benefit, and of educational value to water works operators, superintendents, designing engineers and others in the water works field in Manitoba.

The desire of the Department of Health is to raise the standards of water treatment and purity. This is possible in large measure by creating and furthering an intelligent interest amongst those in the water works field—the operators, who are attending to tasks more important that they fully realize. Toward that end we are now, it is to be hoped, taking another step forward in attending this School for Water and Sewage Works Operators, sponsored by our friends and associates—the Director and Members of the Minnesota Section of the American Water Works Association, with the whole-hearted support of local members, the Department of Health of the State of Minnesota, and the Department of Health and Public Welfare of the Province of Manitoba.

J. FOGGIE,
Chief Sanitary Inspector.